

PROGRESS IN IDENTIFYING SOURCES OF RESISTANCE TO WHITE MOULD  
(*Sclerotinia sclerotiorum*) IN BEANS IN TANZANIA

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White mould has been known as a common and destructive disease of beans in Tanzania for at least 30 years (Riley, 1960). However, almost no attention has been given the disease by the national bean research team at Lyamungu since its establishment in 1979, and recent observations suggest that higher priority should be given to white mould in the breeding programme. This paper summarizes recent progress in field screening for partial resistance to white mould in northern Tanzania.

In our search for sources of resistance, 49 bean genotypes were sown in a white mould nursery for two consecutive years (1990-91) at two sites in northern Tanzania (Table 1) which have been shown to be local "hot spots" for white mould (Mushi *et al.*, 1989). Of the test entries, nine were obtained from an international white mould nursery kindly sent us by Dr. J.R. Steadman, University of Nebraska. The rest were selections among national germplasm, including introductions from CIAI. In both seasons the nursery relied essentially on natural infection despite attempts at artificial inoculation of spreader rows. Severity of white mould was rated using a 1-9 scale where 1 represents absence of symptoms and 9 maximum expression. Days to maturity were also recorded. Results (Table 2) show that several entries were consistently resistant across sites and seasons. These included the cultivars Rabia de Gato, A 55, SUB 10, CAL 71, BAT 1290, DRK 2, AFR 91 and REC 6. A strong negative correlation ( $r = -0.491$ ;  $P \leq 0.01$ ) was found between disease scores and days to maturity.

Our preliminary findings confirm that white mould resistance identified in North America is also effective in Africa where, to our knowledge, white mould resistance has not been sought before. Among entries in the nursery received from Nebraska, A 55 and Rabia de Gato appear outstanding. However, our studies also reveal that partial resistance of the same level is also available in at least eight other genotypes not entries in the International White Mould Nursery. Amongst these is the local landrace, Kiburu, which is widely cultivated on the slopes of Mount Kilimanjaro, where white mould is a regular problem.

Table 1. Environmental data\* for two sites used for white mould resistance screening in Kilimanjaro Region, Tanzania in 1990-91.

Location	Latitude	Altitude (masl)	Rainfall (mm)	Temp (°C)	
				Max	Min
Lambo	3°16'	1067	786	27.2	17.2
Lyamungu	3°13'	1250	1256	23.9	14.9

\* Rainfall and mean maximum and minimum temperatures during the growing season, Feb-Jun (Smithson, 1989).

Table 2. Reactions (mean scores, 1-9 scale) to white mould in a white mould nursery, northern Tanzania, 1990-91.

	1990 Lyamungu	1991 Lambo	1991 Lyamungu		
		68	61	71	80 DAP*
<b>International WM Nursery:</b>					
XPRV 155	2.5	3.0	2.0	4.0	5.5
NY 5223	2.3	5.5	2.5	4.0	4.0
PI 169787	1.8	3.0	3.5	4.5	4.5
2558	4.8	4.0	3.5	4.5	5.5
MD 162	3.5	3.5	3.5	5.0	5.5
Ex Rico	5.3	2.0	2.0	3.5	4.5
Rabia de Gato	2.0	2.0	1.0	2.0	2.0
Laureat	3.0	5.0	2.5	3.0	3.5
A 55	2.5	1.5	2.0	1.0	1.0
<b>Promising Lines :</b>					
CAL 71	2.5	1.0	1.5	1.5	2.0
BAI 1290	2.8	3.0	1.0	1.5	1.5
BRK 2	2.3	2.0	2.0	2.5	2.5
Horsehead x Montcalm	4.3	1.0	2.0	2.5	4.0
AFR 91	1.0	3.0	1.0	2.5	3.0
REC 6	2.3	2.5	2.0	2.5	3.0
SUG 10	2.3	3.0	1.0	1.5	2.0
Horsehead x Malawi	1.8	2.0	1.5	3.0	3.5
<b>Local Entries :</b>					
Lyamungu 85	3.8	2.0	3.0	5.0	5.5
Lyamungu 90 (B 5621)	1.8	2.5	3.5	5.0	6.0
Kiburu	3.5	1.0	1.0	1.5	2.5
<b>Most Susceptible Entries :</b>					
B 13831	5.5	9.0	5.5	7.5	9.0
GLP x 1131	7.0	8.5	6.0	7.5	8.5
Trial Mean	3.5	3.6	2.7	4.1	5.0
S.E.	0.16	1.20	0.59	0.77	0.91
C.V. %	45.4	47.5	31.1	26.2	26.0

\* DAP : Days after planting.

#### REFERENCES

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